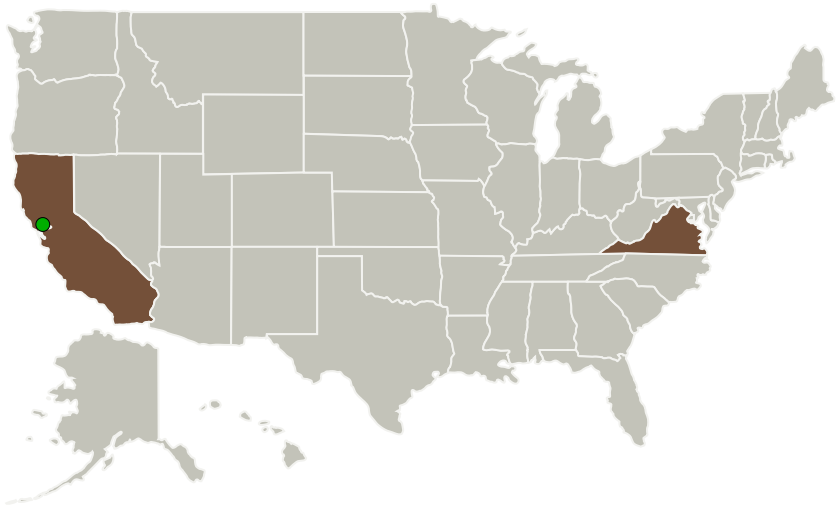
Multipurpose Waste Disposal Bags for Heat Melt Compactor Application, Phase I

Completed Technology Project (2016 - 2016)

Project Introduction

Trash bags from the International Space Station (ISS) are currently stored on-board until they are returned to earth for disposal. Alternate methods are seriously being considered for long duration missions such as travel to Moon and Mars. NASA Exploration Life Support system is currently developing an Heat Melt Compactor (HMC) for waste management for long duration missions. Using HMC, trash can be compacted into disks instead of allowing the trash-filled containers to occupy valuable space in the spacecraft. Such compacted trash can potentially be useful as radiation shields. In order to assist the HMC process, MMI will develop a multipurpose trash bag that will be capable of storing waste generated during travel in space. The waste bag will allow water vapor to pass through during hot melt compactor processing. The bag will also enable encapsulation of the compacted product and will be amenable for sterile storage. In the Phase I effort, waste container bags will be tested for containment of simulated trash typically used on a space mission. The waste container bag material will be tested for removal of water from the bag during the hot melt compaction process. After removal of water, the dehydrated solid compacts will be tested for the prevention of harmful microbial growth. In the Phase II effort, the waste bag material design and volume will be optimized to fit the NASA's hot melt compactor systems that will be used in long duration travels in space.

Primary U.S. Work Locations and Key Partners



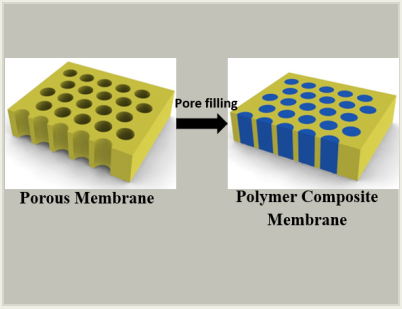


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Table of Contents

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Organizations Performing Work	Role	Type	Location
Materials Modification, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Fairfax, Virginia
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Virginia

Project Transitions

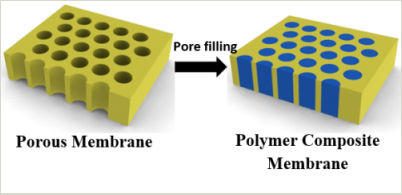
June 2016: Project Start

December 2016: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139994)*

Images



Briefing Chart Image
Multipurpose Waste Disposal Bags for Heat Melt Compactor Application, Phase I
(https://techport.nasa.gov/image/134738)

Final Summary Chart Image
Multipurpose Waste Disposal Bags for Heat Melt Compactor Application, Phase I Project Image
(https://techport.nasa.gov/image/135546)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Materials Modification, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

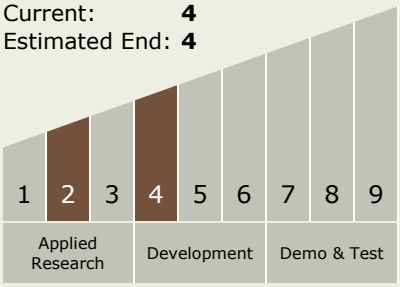
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Krishnaswamy K Rangan

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.3 Waste Management

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System